

AZCC1 Review Key QZ T1

$$ac = -12$$

$$b = 1$$

$$1) \frac{x^2-3x}{2x^2+x-6} \cdot \frac{x^2-4}{x^2-5x+6} = \frac{x(x-3)}{(x+2)(2x-3)} \cdot \frac{(x+2)(x-2)}{(x-3)(x-2)} = \boxed{\frac{x}{2x-3}}$$

$$2x^2+4x-3x-6$$

$$2x(x+2)-3(x+2)$$

$$(2x-3)(x+2)$$

$$2) \frac{x^2-9}{x^2-5x} \cdot \frac{5x-x^2}{x^2-x-12} \cdot \frac{x^2-8x+16}{x-4} = \frac{(x+3)(x-3)}{x(x-5)} \cdot \frac{x(5-x)}{(x-4)(x+3)} \cdot \frac{(x-4)(x-4)}{x-4} = \boxed{-1(x-3)}$$

$$3) 3x^2-12$$

$$3(x^2-4)$$

$$\boxed{3(x+2)(x-2)}$$

$$4) x^3-x^2-6x$$

$$x(x^2-x-6)$$

$$\boxed{x(x-3)(x+2)}$$

$$5) 4x^2-6x-4$$

$$2(2x^2-3x-2)$$

$$\begin{array}{r} 2x^2-4x+1x-2 \\ 2x(x-2)+1(x-2) \end{array}$$

$$\boxed{2(x-2)(2x+1)}$$

$$ac = -15$$

$$b = 14$$

$$6) 5a^2+14a-3$$

$$5a^2+15a-1a-3$$

$$5a(a+3)-1(a+3)$$

$$\boxed{(5a-1)(a+3)}$$

$$7) a^3-2a^2+a-2$$

$$a^2(a-2)+1(a-2)$$

$$\boxed{(a-2)(a^2+1)}$$

$$8) x^2+ax+bx+ab$$

$$x(x+a)+b(x+a)$$

$$\boxed{(x+a)(x+b)}$$

$$9) \frac{5x^2-15x}{27x-3x^3} = \frac{5x(x-3)}{3x(9-x^2)} = \frac{5x(x-3)}{3x(3-x)(3+x)} = \boxed{\frac{-5}{3(3+x)}}$$

$$10) \frac{x^2-7x-30}{x^2-5x-24} = \frac{(x-10)(x+3)}{(x-8)(x+3)} = \boxed{\frac{x-10}{x-8}}$$

$$11) \frac{36x^3}{-42x^2} = \boxed{\frac{6x}{-7}}$$

$$12) \frac{y^2+3y-28}{y^2-49} = \frac{(y+7)(y-4)}{(y+7)(y-7)} = \boxed{\frac{y-4}{y-7}}$$

$$13) \frac{5}{3-x} \quad 3-x \neq 0$$

$$\boxed{3} \neq x$$

$$14) \frac{10}{x^2-25} \quad x^2-25 \neq 0$$

$$(x+5)(x-5) \neq 0$$

$$x \neq -5 \quad x \neq 5$$

$$\boxed{5, -5}$$

$$15) \frac{x^2-49}{2x^2-3x} \quad 2x^2-3x \neq 0$$

$$x(2x-3) \neq 0$$

$$x \neq 0 \quad 2x-3 \neq 0$$

$$2x \neq 3$$

$$x \neq \frac{3}{2}$$

$$\boxed{0, \frac{3}{2}}$$

$$16) \frac{x^2-x-2}{x^3+x^2-2x} \quad x^3+x^2-2x \neq 0$$

$$x(x^2+x-2) \neq 0$$

$$x(x+2)(x-1) \neq 0$$

$$x \neq 0 \quad x \neq -2 \quad x \neq 1$$

$$\boxed{-2, 1, 0}$$

$$17) \frac{x - \sqrt{9-2x}}{-x} = \frac{3}{-x}$$

$$\frac{-\sqrt{9-2x}}{-1} = \frac{3-x}{-1}$$

$$\sqrt{9-2x} = -3+x$$

$$(\sqrt{9-2x})^2 = (x-3)^2$$

$$\begin{array}{r} 9-2x = x^2-6x+9 \\ -9+2x \quad \quad +2x \quad -9 \hline 0 = x^2-4x \end{array}$$

$$0 = x^2-4x$$

$$0 = x(x-4)$$

$$x=0 \quad \boxed{x=4}$$

reject

$$18) \frac{\sqrt{2x+1} - 1}{+1 \quad +1} = 4$$

$$(\sqrt{2x+1})^2 = (5)^2$$

$$\begin{array}{r} 2x+1 = 25 \\ -1 \quad -1 \hline 2x = 24 \end{array}$$

$$\boxed{x = 12}$$

$$19) \quad 2\sqrt{2x+3} + x = 1$$

$$\begin{array}{r} -x \quad -x \\ \hline (2\sqrt{2x+3})^2 = (1-x)^2 \end{array}$$

$$4(2x+3) = 1 - 2x + x^2$$

$$\begin{array}{r} 8x+12 = x^2-2x+1 \\ -8x-12 \quad -8x-12 \\ \hline \end{array}$$

$$0 = x^2 - 10x - 11$$

$$\begin{array}{r} (x-11)(x+1) \\ \hline x=11 \quad | \quad x=-1 \\ \text{reject} \end{array}$$

$$20) \quad \sqrt{x-1} + x = 7$$

$$(\sqrt{x-1})^2 = (7-x)^2$$

$$\begin{array}{r} x-1 = 49 - 14x + x^2 \\ -x+1 \quad +1-x \\ \hline \end{array}$$

$$0 = 50 - 15x + x^2$$

$$= x^2 - 15x + 50$$

$$\begin{array}{r} (x-10)(x-5) \\ \hline x=10 \quad | \quad x=5 \\ \text{reject} \end{array}$$